

Work Order ID 72284

Thursday, July 21, 2011 9:50:54 AM



Page 1

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 7/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 8/10/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

[Signature]

Date: 11-07-24

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start



Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D2580-041

Rev.D DEO-D1

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

S 11/08/08 *CK* *PR BA 11/08/08*

110

0.00



BENDING MACHINE - SKIDTUBES

CNC Bend I

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

1 *0* *BE 11/07/25*

B 72284

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

120

0.00



Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends and remove bending marks

2- Prepare tube for welding as per QSI 004

①

B11/07/26

130

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

DP

11-7-26

W/O:		WORK ORDER CHANGES					
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Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

140

0.00



Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R□□□ Aluminum Rod

M115778 BE 11/07/26

2-Grind welds on step as per Dwg D2580

3-Weld spacers as per dwg D2580

AIR M115778 BE 11/07/26

3- *** N/A**** Insert D4202-1 spacer, swage as per QSI002 and trim/ grind
flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2
x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimension.4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Deburr

} DR 11/07/27

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr

} BB 11/07/27

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr

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Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150 QC Quality Control	QC10- Inspect visual per QSI004- ground welds Memo	0.00 0.00				1	0		
160 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00				21	01	28	①
170 HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.	0.00 0.00				1	0	11/08/01	

W/O:		WORK ORDER CHANGES					
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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

180

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Powder Coating

Memo

START TIME:
OVEN TEMPERATURE:
FINISH TIME:

1:30
320 OF
2:00

0.00

IX 0 M-11/08/02

190

QC3- Inspect Part Finish

0.00



QC

Quality Control

Memo

0.00

1 0 M 11/08/02

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Cust Item ID:

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 ☐ ☐ ☐ M117516

Sikaflex expire date: 01/15

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 ☐ ☐ ☐ M117516

Sikaflex expire date: 01/15

5-Wing Walk as per Dwg D2580 and QSI 005 4.4

Batch:

M118313

HX ~~Ø~~ MJP 11/08/04

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Start Date: 7/21/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 8/10/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

S 11/08/06

④

220



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPPD205-634-041

Location: 33

PPP Rev: C

11/8/8 SP

230



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

CK 11/08/09

11-08-8
④

W/O:		WORK ORDER CHANGES					
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Picklist Print

Thursday, July 21, 2011 9:51:00 AM

Page 1

Work Order ID: 72284

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube



Start Date: 7/21/2011

Required Date: 8/10/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30
 KJ IPP Rev P 10.02.19
 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM IPP Rev:Q
 10.12.01 as per chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D205-1 D2579

 Spacer

Manufactured No

140

Each

443.0000

20

20

Location

Loc Qty

Loc Code

LG002

443

66929

106

67129

196

67308

1

67430

140

BE 1/07/20
 B 72199 *20

D2580-1

 205 Skidtube bent detail

Manufactured No

110

Each

4.0000

1

1

Location

Loc Qty

Loc Code

LG

4

71014

2

71784

2

BE 1/07/25
 B 720901

D2576-3

 Step (maching detail)

Manufactured No

140

Each

44.0000

1

1

Location

Loc Qty

Loc Code

LG

44

66156

44

BE 1/07/26

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Thursday, July 21, 2011 9:51:01 AM

Page 2

Work Order ID: 72284

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 7/21/2011

Required Date: 8/10/2011

Start Qty: 1.00

Required Qty: 1.00

D2855 Manufactured No 200 Each 37.0000 1



Cap



M-F 11/08/04

Location	Loc Qty	Loc Code
FP007	37	
53791	2	
65519	2	
65569	33	

1x

#

AN3-5A Purchased No 200 Each 1,051.000 2



Bolt



M-F 11/08/04

Location	Loc Qty	Loc Code
ST350	1051	
115371	275	
117423	776	

2x

AN960JD10L NAS1149D0332J Purchased No 200 Each 0.0000 2



Washer

M 117087



2x M-F 11/08/04

ALS7-1032-130 Purchased No 200 Each 899.0000 50



Insert



M-F 11/08/04

Location	Loc Qty	Loc Code
ST282	899	
117717	899	

M 118386

50x

W/O:		WORK ORDER CHANGES					
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Thursday, July 21, 2011 9:51:01 AM

Page 3

Work Order ID: 72284

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 7/21/2011

Required Date: 8/10/2011

Start Qty: 1.00

Required Qty: 1.00

AN3C4A Purchased No 200 Each 1,452.000 50 50
BOLT

Location	Loc Qty	Loc Code
ST350	1452	
117313	2	
117688 ✓	388	
117795	500	
117872	22	
118012	500	
118112	40	

m-f 11/08/04

50X

AN960C10L NAS1149C0332 Purchased No 200 Each 0.0000 50 50
R



washer D3566-13 Manufactured No 200 Each 19.0000 1 1



Gasket

m 118300

50X m-f 11/08/04

m-f 11/08/04

Location	Loc Qty	Loc Code
FP	18	
69281 ✓	18	
FP014	1	
68341	1	

D3566-5 Manufactured No 200 Each 18.0000 1 1



Gasket

m-f 11/08/04

Location	Loc Qty	Loc Code
FP015	18	
68961 ✓	6	
71601 ✓	12	

1X

Thursday, July 21, 2011 9:51:01 AM

Shop Packet Print

Page 3

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Page 4

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Parent Item Name: Replacement Skidtube

Start Date: 7/21/2011

Required Date: 8/10/2011

Start Qty: 1.00

Required Qty: 1.00

D3566-1

Manufactured No

200

Each

28.0000

2

2



Gasket

Location

Loc Qty

Loc Code

FP011

26

70769

14

71580 ✓

12

FP015

2

68924

2



M-L 11/08/04

2X

D3564-11

Manufactured No

200

Each

12.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP019

12

67591 ✓

12

200

Each

20.0000

1

1



M-L 11/08/04

1X

D3564-13

Manufactured No

200

Each

20.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP016

9

69280

9

FP017

11

71594 ✓

11

200

Each

14.0000

1

1



M-L 11/08/04

1X

D3564-9

Manufactured No

200

Each

14.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP019

14

67590

4

69943 ✓

10



M-L 11/08/04

1X

Thursday, July 21, 2011 9:51:02 AM

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Page 4

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Parent Item Name: Replacement Skidtube

Start Date: 7/21/2011

Required Date: 8/10/2011

Start Qty: 1.00

Required Qty: 1.00

D3564-5
Wearshoe

Manufactured No

200 Each

17.0000

1

1

Location

Loc Qty

Loc Code

FG

2

34806

2

FP019

15

70864 ✓

15

D2594-3
O-Ring, 205 Skidtube

Manufactured No

200 Each

740.0000

16

16

Location

Loc Qty

Loc Code

FP-A

740

65518 ✓

54

66952 ✓

686

D2594-1
Plug, 205 Skidtube

Manufactured No

200 Each

201.0000

16

16

Location

Loc Qty

Loc Code

FP-A

201

42807

28

67441

7

68943 ✓

166

m-l 11/08/04

16x
m-l 11/08/04

16x
m-l 11/08/04

16x

W/O:		WORK ORDER CHANGES					
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DESIGN #	DRAWN BY RH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07.06.28 #D

DEO ATTACHED
UNDER REVIEW

PH110630
RMV P11.06.30

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 72289

11-07-2P

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

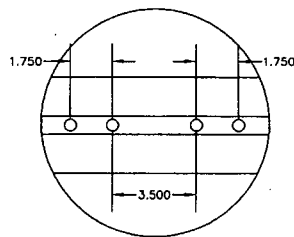
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

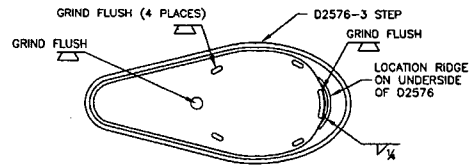
NOTE: Date & initial all entries

72289

DETAIL A
SCALE 5:24



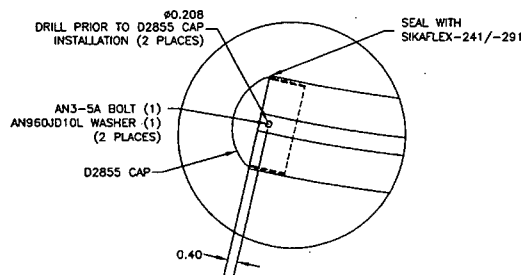
DETAIL B
SCALE 5:24



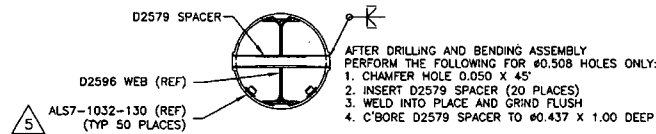
RELEASED
07.06.28

DEO ATTACHED
RMV 07.06.30

DETAIL C
SCALE 5:24



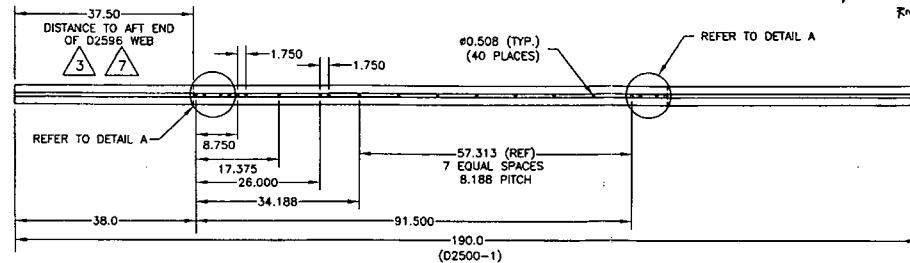
SECTION D-D
SCALE 5:24



D2580-041 NOTES

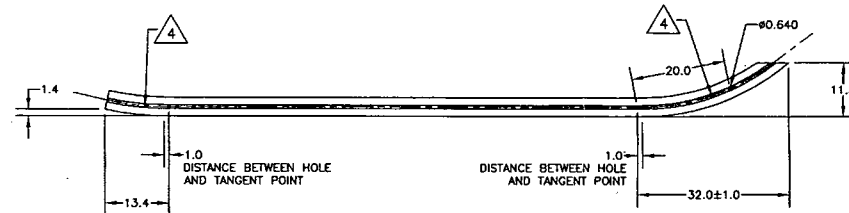
- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

D2580-1 DRILLING DETAIL

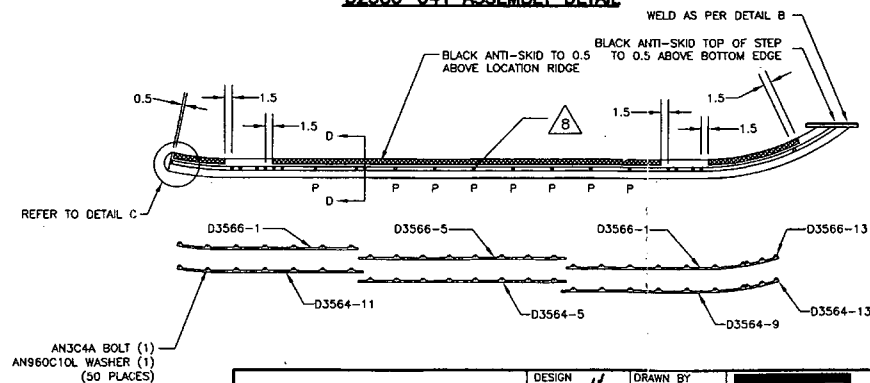


UNDER REVIEW
07.11.06.30
RMV 07.11.06.30

D2580-1 BENDING AND CUTTING DETAIL



D2580-041 ASSEMBLY DETAIL



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THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		CHECKED	APPROVED		
DATE		07.02.27		DRAWING NO. D2580	SCALE 1:24
				TITLE 205 SKIDTUBE ASSEMBLY	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 258

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliot
Job number: B69986
Part number: 205-634-041
Description: 205
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Pat Evans Date of Test Coupon 11.06.24
Welder Barclay Elliot Date of Test Coupon 11/06/24

The above named individual is qualified in accordance with AWS D17.1.2001 to weld

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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NOTE: Date & initial all entries